

# Use of MODIS Cloud Top Pressure to Improve Assimilation Yields of AIRS Radiances in GSI

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Improvements to global and regional numerical weather prediction have been demonstrated through assimilation of data from NASA's Atmospheric Infrared Sounder (AIRS). Current operational data assimilation systems use AIRS radiances, but impact on regional forecasts has been much smaller than for global forecasts. Previously, it has been shown that cloud top designation associated with quality control procedures within the Gridpoint Statistical Interpolation (GSI) system used operationally by a number of Joint Center for Satellite Data Assimilation (JCSDA) partners may not provide the best representation of cloud top pressure (CTP). Because this designated CTP determines which channels are cloud-free and, thus, available for assimilation, ensuring the most accurate representation of this value is imperative to obtaining the greatest impact from satellite radiances. This paper examines the assimilation of hyperspectral sounder data used in operational numerical weather prediction by comparing analysis increments and numerical forecasts generated using operational techniques with a research technique that swaps CTP from the Moderate-resolution Imaging Spectroradiometer (MODIS) for the value of CTP calculated from the radiances within GSI.

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